

RIVERS AND FLOODS

By MONTROSE W. HAYES

[In charge River and Flood Division]

Elsewhere in this issue there is an article which discusses all the floods of the United States during the last four months except that in the Columbia River of Oregon and Washington. The Columbia River passed above

flood stage in May, but had not receded at the end of June; and information concerning it is not complete. It will be discussed in a later issue of the REVIEW.

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, W. F. McDonald in charge]

NORTH ATLANTIC OCEAN

By W. F. McDONALD

Atmospheric pressure.—Average values of daily barometric observations at land stations representing the Atlantic area during June 1933 were for the most part within one tenth of an inch of normal. The greatest deficiency was only 0.12 inch, at Bermuda and also at Reykjavik. The Azores HIGH was somewhat above normal, but the largest excess, 0.10 inch, was reported from the Shetland Islands. (See table 1.)

The extreme range of pressures reported by ships on the trans-Atlantic routes was from 29.33 to 30.59 inches, the lower reading from the American S.S. *Quaker City*, near 59° N. 19° W. on the 4th, and the higher reading from the American S.S. *Sahale*, near 42° N. 40° W. on the 16th. The lowest reported from tropical as well as extratropical Atlantic waters during June was 29.00 inches from the American tanker *Eastern Sun*, at 16° 27' N., 76° 15' W., on the last day of the month. This low barometer occurred in connection with the passage of a tropical disturbance through the Caribbean Sea, noted below.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, June 1933

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	<i>In.</i>	<i>In.</i>	<i>In.</i>		<i>In.</i>	
Julianehaab, Greenland.....	29.71		29.96	18, 23	29.18	3
Reykjavik, Iceland.....	29.76	-0.12	30.24	25	29.24	5
Lerwick, Shetland Islands.....	29.90	+0.10	30.34	9	29.09	17
Valencia, Ireland.....	29.95	-0.05	30.48	10	29.43	20
Lisbon, Portugal.....	30.04	+0.01	30.21	23	29.94	6, 12
Madeira.....	30.11	+0.04	30.23	27	30.01	7, 13
Horta, Azores.....	30.32	+0.08	30.48	16	30.06	1
Belle Isle, Newfoundland.....	29.83	-0.01	30.36	18	29.20	2
Halifax, Nova Scotia.....	29.89	-0.08	30.18	25	29.66	13
Nantucket.....	29.91	-0.07	30.19	24	29.65	30
Hatteras.....	29.96	-0.05	30.20	15	29.71	13
Bermuda.....	30.01	-0.12	30.26	29	29.76	2, 3
Turks Island.....	29.97	-0.06	30.06	25, 30	29.86	1, 2
Key West.....	29.98	-0.03	30.10	25	29.77	1
New Orleans.....	30.00	+0.02	30.16	15	29.76	23
Cape Gracias, Nicaragua.....	29.85	-0.02	29.90	25, 29, 30	29.80	1, 17, 20

NOTE.—All data based on a.m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Extratropical cyclones and gales.—Moderate to fresh gales were fairly widespread on the 1st, 2d, and 3d, between New York and the Irish coast. At this time vigorous but not unusually intense cyclonic depressions, along the American coast and over high latitudes, intensified the barometric gradient on the north side of a well-developed high-pressure area that dominated the region between Bermuda and Gibraltar. (See chart VIII.)

Gales of force 8 to 9 were again reported over the middle and eastern parts of the main steamer lanes on the 18th and 19th. The Azores were then under the influence of

the strongest high-pressure area of the month, and these winds appear to have been due to that factor as much as to any cyclonic activity.

In fact the most remarkable feature of the month's weather on the Atlantic was the persistent and quite intense character of the Atlantic HIGH, which maintained uninterrupted dominance over the region between the Azores and Africa, and frequently extended its influence to high latitudes.

Apart from these two brief periods of gales at the beginning and shortly after the middle of the month, very few gales were encountered in extratropical latitudes, although the highest wind reported, which was of storm force (Beaufort 11), occurred near Long Island, on the 10th; this was described in the report as a violent thunder squall.

Most unusual gale conditions, not so far identified as to probable cause, were observed by the Belgian steamship *Persier* on the 26th and 27th while en voyage from Rio to Antwerp, between 9° and 15° N., and near longitude 25° W. The strong winds began from the west, and on the 26th attained a force of 7 from that direction, but the accompanying barometer was about normal, at 29.86 inches. On the 27th the winds came around to the usual direction of the trades, and blew strongly from the northeast, reaching the force of a gale (8) from east-northeast, with the barometer slightly higher than on the previous day. It is of interest to note that at the time these unusual winds were observed 2,000 miles east of Trinidad, a tropical disturbance was starting near the same latitude off the coast of South America, as described below.

Tropical cyclone.—A tropical disturbance originated a few days before the close of the month at an undetermined position over the waters north of Guiana. It was first disclosed on the morning of the 27th by a radiogram from the Brazilian steamship *Jaboatão*, reporting an easterly gale with barometer 29.27 inches, near 10° N. 59° W. This storm passed just south of Trinidad on the same afternoon, doing considerable damage there, and at 8 p.m. of that same day the American tanker *E. J. Bullock*, in the Gulf of Paria, reported a north wind of force 11, barometer 29.12, showing the storm to be fully developed, though of small extent.

The first report from a ship to reveal winds of full hurricane intensity came from the American tanker *Gulfcrest*, which was overtaken by the hurricane at 6 a.m. of the 29th, near 13° N. 70° W.; wind, SE, 12; barometer, 29.10 inches. The American tanker *Eastern Sun* was close to the center of the cyclone at 3 p.m. of the 30th, near 16° N. 76° W., where hurricane winds backed from north through west to south, and the barometer fell to 29 inches, its lowest value. That the area of hurricane winds was still of small diameter at that position is shown by reports from the American steamers *Mobile City* and *Minnesotan*, each of which had only a strong easterly gale, while the *Eastern Sun*, not more than 50 miles away, was under stress of the hurricane center.